NAME: DATE:

p1020: graded take-home open-note practice exam (version 202)

Question 1

Let f represent a function. If $f[28] = 30$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{7} + 23\right]}{2} - 11$$

Find the solution.

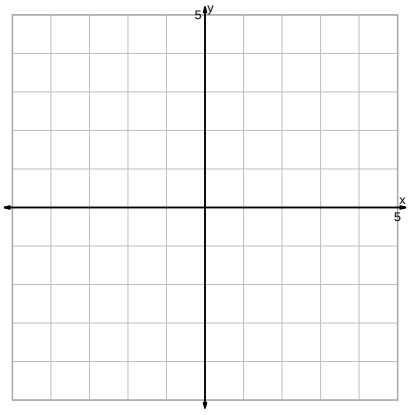
$x =$

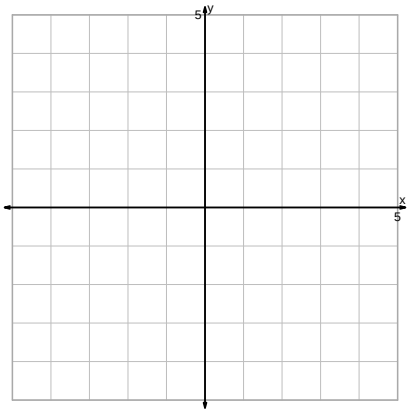
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

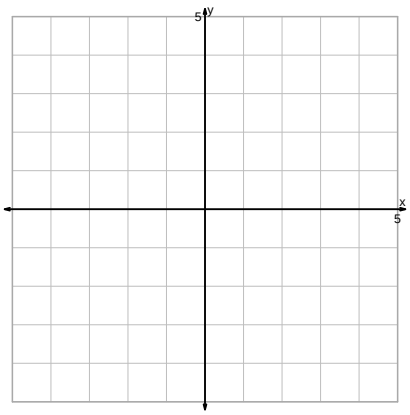
$y = (2x)^2$

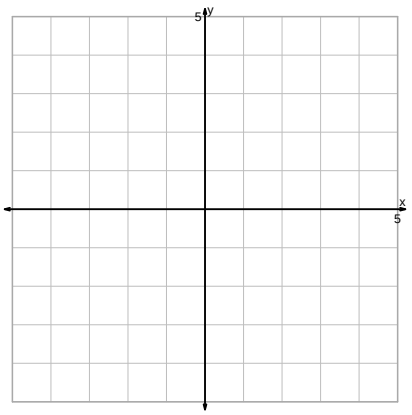




$y = 2^x + 2$

$y = 2^{-x}$

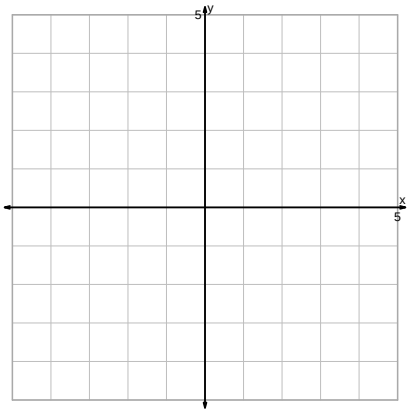


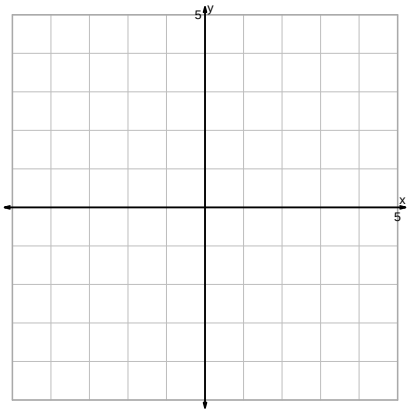


$y = \log_2\left(\frac{x}{2}\right)$

Question 2 continued...

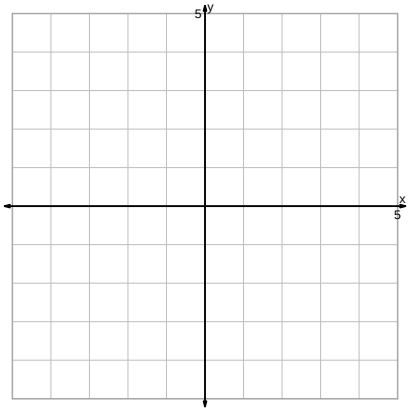
$y = \sqrt[3]{x+2}$

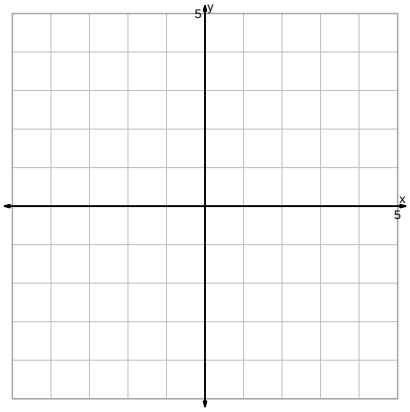




$y = \sqrt[3]{x-2}$

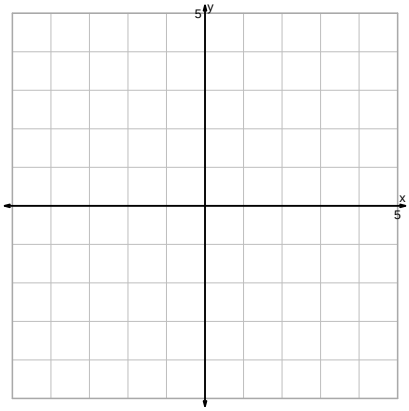
$y = 2 \cdot x^2$

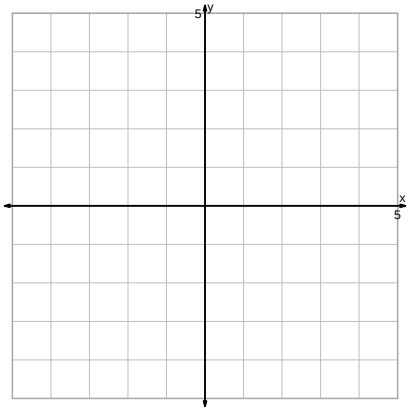




$y = \frac{x^3}{2}$

$y = -\sqrt{x}$

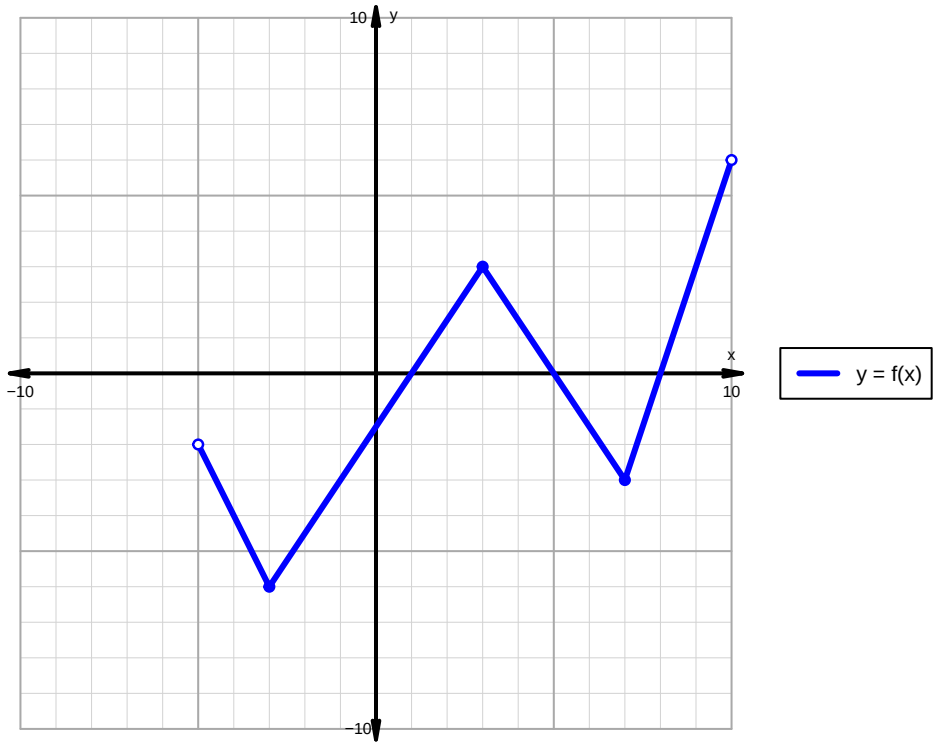




$y = \sqrt{x} - 2$

Question 3

A function is graphed below.



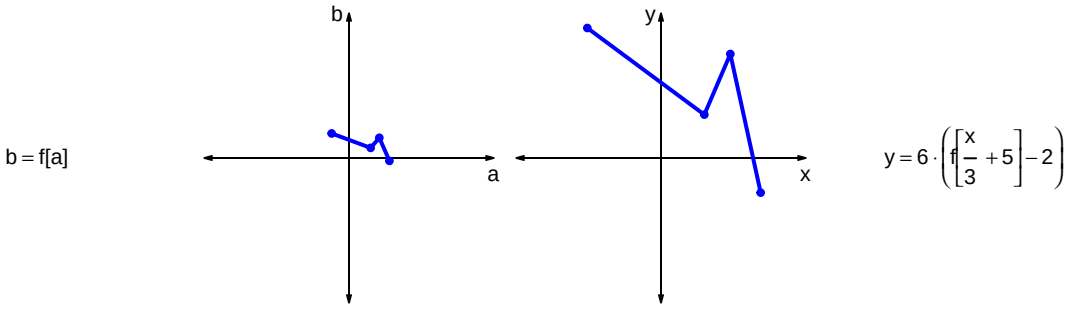
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 6 \cdot \left(f\left[\frac{x}{3} + 5\right] - 2\right)$ are represented below in a table and on graphs.

a	b	x	y
-12	17	-51	90
15	7	30	30
21	14	48	72
28	-2	69	-24



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 6 \cdot \left(f\left[\frac{x}{3} + 5\right] - 2\right)$?

Question 5

A parent square-root function is transformed in the following ways:

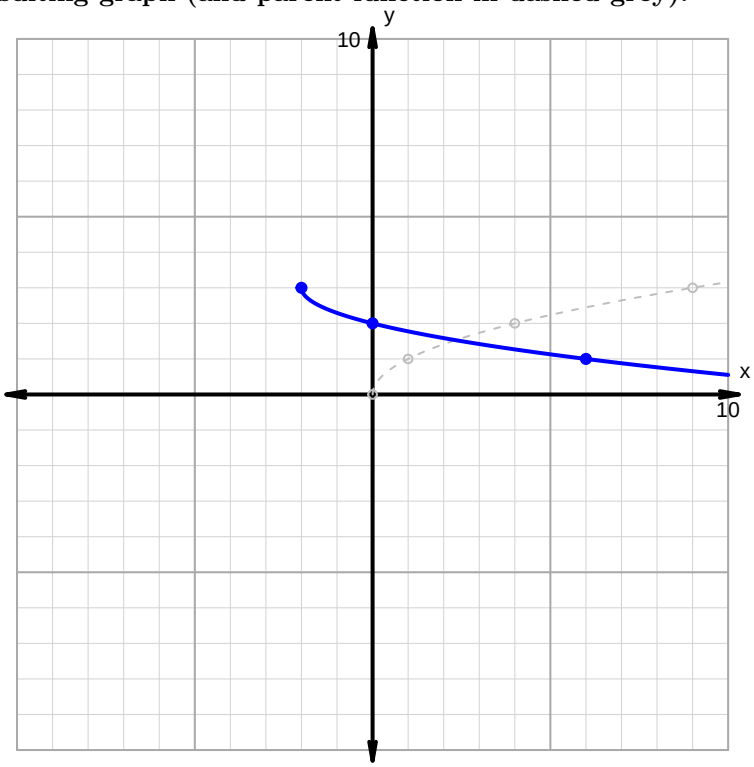
Horizontal transformations

1. Translate left by distance 1.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Translate down by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

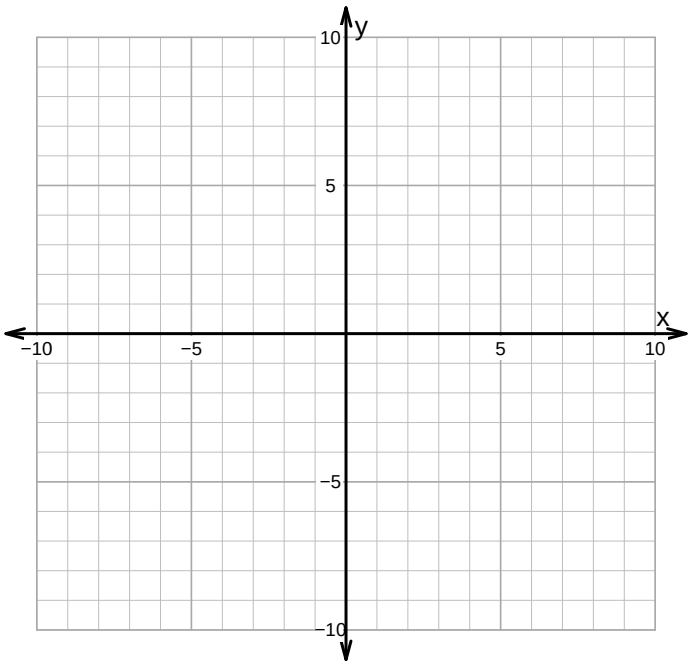


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{2} \cdot |x - 1| + 2$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	